

BRONICA  
CANON CAMERAS  
AND BINOCULARS  
CONTAX

**DELTA INTERNATIONAL**  
For all your photographic needs...and more!  
877-782-9840 [deltainternational.com](http://deltainternational.com) [CLICK HERE](#)



**SCIENCE NEWS CATEGORIES**

|                     |                      |
|---------------------|----------------------|
| OUR SOLAR SYSTEM    | COSMOLOGY            |
| OTHER SOLAR SYSTEMS | SPACE MISSIONS       |
| STARS               | OBSERVATORIES        |
| GALAXIES            | LIFE IN THE UNIVERSE |
| THE MILKY WAY       | PEOPLE               |



**Try two issues free! Click here**

Login    Logout  
Register  
Update Profile

#### Astronomy Magazine

News  
  Science  
  Hobby  
Feature Stories  
  Science  
  Hobby

Photo Gallery  
Astroshops

TheSky Online  
For Beginners

Discussion Forums  
Astronomy Quiz

Organization Guide  
Calendar of Events  
Vendor Directory

■ = registered content



SEARCH

Articles

▼

GO

## SCIENCE NEWS STARS

### Cosmic Blast

*High-energy gamma rays from exploding stars in a nearby galaxy are detected by a CANGAROO in the Australian outback.*

by Pamela L. Gay



The CANGAROO-II telescope is located in Australia.  
*M. Mori*

Nothing with [mass](#) can travel at the [speed of light](#), but galactic [cosmic ray](#) particles come close. These fast-moving particles create gamma-ray [photons](#) as they interact with [interstellar](#) gas and [dust](#). Recently, astronomers studied cosmic [gamma rays](#) with the CANGAROO (Collaboration of Australia and Nippon for a Gamma Ray Observatory in the Outback) II [telescope](#) in Australia to determine that [star](#) explosions are the primary source of galactic cosmic rays.

For every cause there is an effect. The CANGAROO research relied on this basic premise. Cosmic rays cause gamma rays. Gamma rays, in turn, create flashes of light called Cherenkov [radiation](#) in Earth's [atmosphere](#). However, scientists aren't sure where [extragalactic](#) cosmic rays come from but hypothesized that star explosions produce them. When Japanese scientist Chie Itoh and her colleagues pointed the CANGAROO-II telescope at the [starburst galaxy](#) NGC 253, they detected Cherenkov radiation. After further analysis, they surmised that star explosions in NGC 253 were the initial cause that created this effect.

The gamma-ray photons that were detected via Cherenkov radiation had energies millions of times greater than the energies of photons with optical wavelengths. These [tera-electron-volt](#) (TeV) gamma rays had not been detected in prior studies of normal nearby galaxies. Our own [galaxy](#) contains diffuse TeV gamma ray [emission](#) thought to be linked to [supernova](#) remnants.

This study of NGC 253 demonstrates that ground-based telescopes can study gamma ray sources indirectly. This means that telescopes such as CANGAROO-II will be able to support NASA's Gamma ray Large Area Space Telescope (GLAST) when it launches in 2006. With a 10-meter-diameter collecting area, CANGAROO-II is expected to uncover a multitude of new TeV sources. NGC 253 is just the twelfth TeV gamma-ray source discovered so far.

"With CANGAROO-II, it's like we have propped open the window to the [universe](#) by a few more inches, expanding our view," says team member Shohei Yanagita.



Starburst galaxy NGC 253 is estimated to undergo one supernova every three years.  
*AURA / STScI / NASA*

[Email-A-Friend](#)

03/02/2003

[Site Map](#) | [Glossary](#) | [Privacy Statement](#) | [Contact Us](#) | [Advertising Info](#) | [About Us](#) | [Employment](#)

Copyright © 1996-2003 Kalmbach Publishing Co.